



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/424,684	11/29/1999	KIYOFUMI INANAGA	7246/57889	8380

530 7590 03/21/2007  
LERNER, DAVID, LITTENBERG,  
KRUMHOLZ & MENTLIK  
600 SOUTH AVENUE WEST  
WESTFIELD, NJ 07090

EXAMINER
----------

FAULK, DEVONA E

ART UNIT	PAPER NUMBER
----------	--------------

2615

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/21/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 09/424,684	<b>Applicant(s)</b> INANAGA ET AL.	
	<b>Examiner</b> Devona E. Faulk	<b>Art Unit</b> 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 November 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

The applicant's RCE filed on 10/2//2006 was received and the amendment entered.

#### ***Response to Arguments***

1. Applicant's arguments, filed 7/31/2006, with respect to the rejection(s) of claim(s) 1,2 and 8 under 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Mouri.
2. Claims 3-7 are cancelled.

#### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1,2 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites "... at least front and back left channel directional components...front and back right channel directional components". The specification discloses that the distributing circuit receives audio signals of four channels (page 5, lines 12-16). This language is consistent throughout the specification. The specification does not disclose the audio signal including front back left and right channel directional components as recited in the claims. The examiner asserts that the language as recited does not agree with the specification because a signal including

Art Unit: 2615

front back left and right channel directional components does not equate to the description of the audio signals in the specification.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1,2** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mouri (US 5,799,094) in view of Sotome et al. (US 6,850,621) in further view of Matsuo (US 6,553,121).

7. **Claims 1 and 2** share common features.

Regarding **claims 1 and 2**, Mouri discloses an audio reproducing apparatus Figure 1), comprising:

A distribution circuit (21a-21i; Figure 1) receiving input audio signals of N channels including at least front and back left channel directional components, front and back right channel directional components (Figure L,R,SL,SR), and a sound field image signal (C , figure 1);

Said distribution circuit processing said sound field image signal to produce at least two processed signals which are added to at least some of said input audio signals, whereby said distributing circuit generates audio signals of N-1 channels that represent the positions of sound images at least corresponding to the front and back left

channel directional components and the front and back right channel directional components as sound image components (Figure 1).

Furthermore regarding **claim 2**, Mouri discloses wherein the distributing circuit includes a variable attenuating circuit receiving the sound field image signal, whereby varying amounts of the sound field image signal are added to at least some of the audio signals of N channels; said distributing circuit outputting signals that represent positions of the sound images of N-1 channels (Figure 1, attenuator)..

Mouri discloses producing audio signals having an equivalent sound field or M electrical-acoustic converting units ( $M=2$ , Figure 1) and processing the audio signals from the M electric-acoustic converting units to both ears of the listener. .

Mouri fails to disclose a first signal processing circuit for processing audio signal of N-1 channels output from the distributing circuit on each channel.

Sotome discloses a first signal processing circuit for processing audio signals of N-1 output (Figure 15, 30 sound localization unit).

Mouri as modified by Sotome fails to disclose a second signal processing circuit for receiving the audio signals from a first signal processing circuit and equivalently processing the audio signals corresponding to transfer functions from the M electric – acoustic converting units to both ears of the listener. Matsuo discloses in Figure 2 an apparatus comprising a sound processing unit (transfer functions 11-14) and transfer 15 and 16 for generating a sound image which is localized outside the head of the user wearing the headphones (Figure 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mouri with the teaching of Sotome and Matsuo for the purpose of providing a three-dimensional sound field to a headphone user.

8. **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Mouri (US 5,799,094) as applied above to claims 1 and 2 and Sotome et al. (US 6,850,621) as applied above to claims 1 and 2 and Matsuo (US 6,553,121) as applied above to claims 1 and 2 in further view of McGrath (US 6,259,795).

Regarding **claim 8**, Mouri as modified by Sotome and Matsuo discloses an output means for supplying the output audio signals of the first signal processing circuit to an outside of the apparatus. Mouri as modified by Sotome and Matsuo fail to disclose a detecting means for detecting a motion of the head of the listener and controlling means for controlling the signal processing corresponding to the detecting means and wirelessly supplying the output signals. McGrath discloses a detecting means for detecting a motion of the head of the listener and controlling means for controlling the signal processing corresponding to the detecting means (Figure 1; column 5, line 52-column 6, line 11). It would have been obvious to modify the Mouri as modified by Sotome and Matsuo to include the head tracking apparatus of McGrath for the purpose of improving the realism of listening to audio with headphones.

Regarding wirelessly supplying the output signals, the examiner takes official notice that using wireless transmission is known in the art and is used for the benefit of allowing increased mobility for the user.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devona E. Faulk whose telephone number is 571-272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848.

The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 2615. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 09/424,684

Page 7

Art Unit: 2615

DEF



VIVIAN CHIN  
SUPERVISOR, PATENT EXAMINER  
TECHNICAL CENTER 2600

3/19/07